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by Mohan B. Kumar and Amy Nahwegahbow

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.. not available for a specific reference period
... not applicable
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0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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Past-year suicidal thoughts among off-reserve First Nations, Métis and Inuit adults aged 18 to 25: Prevalence and associated characteristics

by **Mohan B. Kumar** and **Amy Nahwegahbow**

Abstract

For decades, researchers have reported high suicide rates among Aboriginal youth, which are several times higher than rates among non-Aboriginal youth. Based on the 2012 Aboriginal Peoples Survey, this article presents estimates of prevalence of suicidal thoughts among off-reserve First Nations, Métis and Inuit adults aged 18 to 25. It examines associations between past-year suicidal thoughts and childhood experiences and family characteristics; mental disorders and personality factors; and socio-demographic characteristics, many of which have been shown to be related to suicidal thoughts in other populations.

About 1 in 20 to 1 in 10 off-reserve First Nations, Métis and Inuit young adults reported having had suicidal thoughts in the previous 12 months and about 1 in 5 to 1 in 4 reported ever having had suicidal thoughts in their lifetime. Suicidal thoughts were twice as prevalent among off-reserve Aboriginal young adults as in non-Aboriginal young adults. In all three Aboriginal groups studied, young adults who reported having mood and/or anxiety disorders, ever using drugs or hopelessness were more likely to have had past-year suicidal thoughts than those who did not report these. However, young adults who reported high self-worth were less likely than those who did not to have suicidal thoughts. Other factors were associated with suicidal thoughts in young adults in some, but not all groups.

The identification of risk factors for suicidal thoughts in these populations will add to the existing literature and could inform the development and/or evaluation of prevention programs and policies.

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Introduction

Aboriginal people, who include First Nations people living on or off reserve, Métis and Inuit, die by suicide at a higher rate than non-Aboriginal people, a loss that causes grief and bereavement for family and friends. It represents a significant loss to the community, particularly when the victim is a young person.[1]

For decades, researchers have reported high suicide rates among Aboriginal youth. Among children and youth, during the 2000-to-2002 and the 2005-to-2007 periods, mortality rates from self-inflicted injuries were seven- and ten-fold higher among males and 16 and 22 times higher among females in areas with high percentages of First Nations individuals compared to low-percentage areas.[2] Among Inuit, rates were even more elevated: in the 1994-to-1998 period, the suicide rate among children and youth in the Inuit homeland,[3] Inuit Nunangat (which includes some non-Inuit: 5% of those under 25 years), was 18 times higher than in the rest of Canada.[4] A decade later, the relative rate was 33 times higher due to a decline in suicide rates in the rest of Canada, whereas they were unchanged in Inuit Nunangat.[4]

Suicidal thoughts, which are both predictors and precursors of suicides and suicide attempts,[5-9] have been shown to be prevalent at significantly higher levels among young Aboriginal people. In 2010, 23% of on-reserve First Nations adolescents from the Saskatoon Tribal Council reported suicidal thoughts, compared with 9% of Saskatoon urban adolescents.[10] And, in 2006, 10% of young adult Métis reported having ever had suicidal thoughts.[11] In 2004, 45% of Inuit aged 15 to 24 in Nunavik, Quebec reported having had suicidal thoughts at some point in their lifetime, and 24% reported having had suicidal thoughts during the past year.

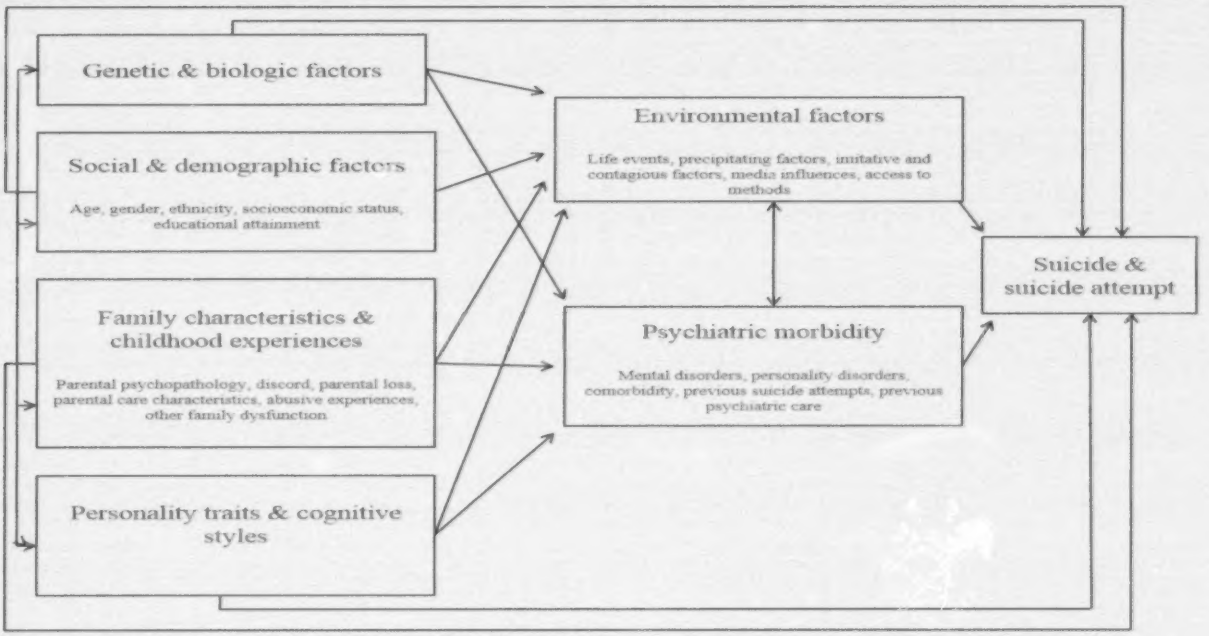
The high suicide rates among Aboriginal youth relative to non-Aboriginal youth underscore the need to understand the extent of suicidal thoughts and factors associated with them. This study aims to estimate the prevalence of past-year and lifetime suicidal thoughts and examine the mental health, personality (low self-esteem and hopelessness), demographic and socioeconomic factors associated with the former among First Nations, specifically those living off reserve, Métis and Inuit adults aged 18 to 25 years. The identification of risk factors for suicidal thoughts in these populations will add to the existing literature and could inform the development and/or evaluation of prevention programs and policies.

Risk factors for suicidal thoughts

Risk factors for suicidal thoughts, attempts and completions among adolescents and young adults have been identified in different populations. Several conceptual models have attempted to outline the relationships between risk factors of suicidal behaviour and the outcome itself. According to a model proposed by Beautrais,[12] multiple domains of risk factors act together to influence an individual's vulnerability to suicidal behaviour (Figure 1). These include genetic and biologic factors, social and demographic factors, family characteristics and childhood experiences, personality factors such as low self-esteem and hopelessness, traumatic life events and psychiatric illnesses.

Another model, the Stressor-Diathesis model,[13] proposes that stress-inducing factors, such as conflicts between the psychological needs of an individual and the needs of the society, the worsening of mental illnesses, personality factors such as hopelessness and impulsivity, familial/genetic factors, childhood experiences, smoking, and alcohol abuse are risk factors for suicidal behaviour. While these models incorporate many risk factors that have been identified in Aboriginal populations, they do not include others such as residential school experience and marginalization, which have been shown to be associated with suicidal behaviour.[14]

Figure 1
Conceptual model of risk factors for suicide and suicide attempts among youth proposed by Beautrais (2000)


Genetic & biologic factors
Social & demographic factors
Age, gender, ethnicity, socioeconomic status, educational attainment
Family characteristics & childhood experiences
Parental psychopathology, discord, parental loss, parental care characteristics, abusive experiences, other family dysfunction
Personality traits & cognitive styles
Environmental factors
Life events, precipitating factors, imitative and contagious factors, media influences, access to methods
Psychiatric morbidity
Mental disorders, personality disorders, comorbidity, previous suicide attempts, previous psychiatric care
Suicide & suicide attempt

Source: Risk Factors for Suicide and Attempted Suicide Among Young People (Beautrais, A. 2000).

Many of the risk factors that are linked to suicides and suicide attempts in other populations are also linked among Aboriginal people. However, risk factors vary by Aboriginal group and sex. For example, risk factors for suicide attempts among Inuit youth include: being male; having a friend who attempted or committed suicide; physical abuse history; solvent abuse history; and parental alcohol or drug problems.[15] Among First Nations adolescents living on reserve in Manitoba, suicidal behaviour was associated with: being female; having depression; being abused or in fear of being abused; having had a hospital stay; and substance use.[16] Other factors include transgenerational effects of rapid culture change such as sedentarization, economic and political marginalization, geographic isolation, and lack of personal or career opportunities (for a review, please see Fraser et al. (2015)).[14] Between sexes, among Inuit youth, while marijuana use and participation in hunting activities were associated with suicide attempts among females, it was alcohol misuse among males. However, in both sexes, psychological distress, sexual abuse and physical violence were associated with suicide attempts.[14]

Suicidal thoughts have many risk factors in common with suicide attempts and completions. Some of these, including parental care characteristics, are unique to young adulthood (18 to 25 years) when individuals are more vulnerable to mental health problems such as depression.[17-19] This is particularly the case among members of racial and ethnic minority populations.[20, 21] The following is a summary of risk factors of suicidal thoughts, specifically those that apply to young adults and, in the case of some risk factors, to Aboriginal young adults.

Childhood experiences and family characteristics

Residential school attendance had a number of negative effects on many of those who attended. They were separated from their family and in some cases, experienced physical and sexual abuse. They also experienced systematic suppression of their language and cultural identity.[22-25] Consequently, residential school attendance has been linked to inadequate parenting skills, the breakdown of families,[26, 27] mental illnesses, alcoholism,[28] and child abuse[30], all of which are associated with suicidal thoughts. Among on-reserve First Nations youth and young adults, suicidal thoughts have been shown to be associated with a family history of residential school attendance.[29, 30]

Other adverse childhood experiences including being bullied,[31-33] mistreatment during childhood, neglect, physical and/or sexual abuse,[34, 35] low levels of parental attachment, weak emotional bonds with parents,[36] and parents' separation or divorce[37, 38] have been associated with suicidal thoughts even when other risk factors are taken into account.

Family characteristics such as low social support have been demonstrated to be related to suicidal thoughts.[39] Consistent with this, living alone is also a risk factor.[40] The relationship between low social support and suicidal thoughts is suggested to be mediated by lower self-esteem.[41]

Mental disorders and personality traits

Mood disorders (notably, depression and anxiety) and suicidal thoughts in young adults[39, 42] have been shown to be associated in different populations and for both sexes.[43, 44]

The use of drugs such as cocaine and heroin has been linked to suicidal thoughts among young adults.[43, 45, 46] Marijuana use was associated in some reports[43] but not in others.[45, 47]

Certain types of alcohol consumption such as "drinking to cope"[48, 49] and alcohol use disorder[50, 51] are risk factors for suicidal thoughts while others like "frequent, solitary drinking" are not.[42] The depressive effects of alcohol use disorder are suggested to play a role in the latter's association with suicidal behaviour.[52]

The relationship between smoking and suicidal thoughts is less clear. It has been hypothesized that chronic smoking promotes depression. It therefore may be a mechanism for an association with suicidal thoughts.[53] In some studies, daily smoking was associated with suicidal thoughts among young adults, even when other factors including depression were taken into account.[34, 45, 54] In other studies, when adjustments were made for other risk factors, daily smoking was no longer significant.[36]

Hopelessness, or the inability to think about or imagine a tolerable future[55] has been identified as a risk factor for suicidal thoughts in different populations[44, 47, 56] and in longitudinal studies.[57] Low self-esteem has also been associated with suicidal thoughts among young adults, in general.[57-59]

Socio-demographic factors

While men were more likely to commit suicide, in many studies, women were more likely to report suicidal thoughts.[60, 61] For instance, among on-reserve Manitoba First Nations adolescents, being female was associated with an increased likelihood of suicidal thoughts and attempts.[16] However, in other studies, no sex differences were reported.[47, 62, 63]

Higher life stress has also been associated with suicidal thoughts among the Aboriginal population.[64]

Attending college/university has been shown to be protective due to increased availability of mental health resources, peer networks and social supports.[65, 66] As a result, suicide rates among post-secondary students are significantly lower than among non-students.

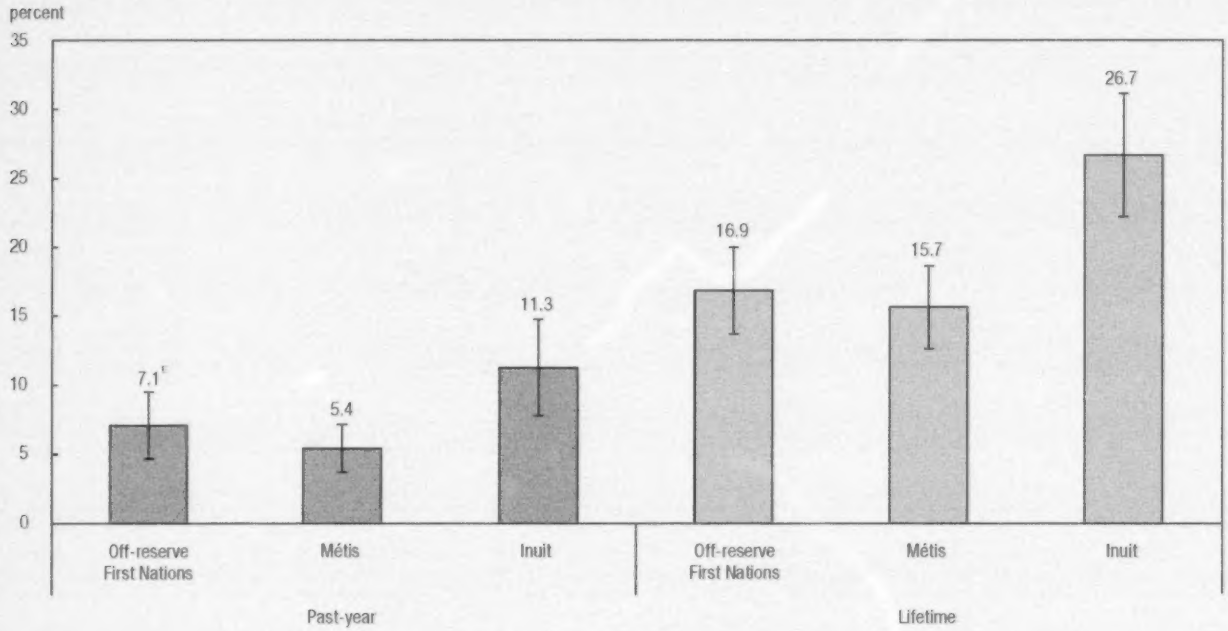
In this study, factors in the Beautrais model and those identified in the literature review of risk factors specific to suicidal thoughts among young adults were chosen for exploration. However, data limitations meant that not all factors could be analyzed. Briefly, those that were explored in the study were ones that related to childhood experiences and family characteristics, mental disorders, personality factors, and socio-demographic factors. The Methods section explains how these were operationalized.

Results

More than 1 in 10 young Inuit adults had suicidal thoughts in the previous year

In 2012, 11.3% of Inuit aged 18 to 25 reported past-year suicidal thoughts (Chart 1); the corresponding figures were 7.1% among their off-reserve First Nations counterparts, and 5.4% among Métis. Higher percentages reported lifetime suicidal thoughts: 26.7% of Inuit, 16.9% of off-reserve First Nations, and 15.7% of Métis.

Chart 1
Prevalence of past-year and lifetime suicidal thoughts among off-reserve First Nations, Métis and Inuit adults, aged 18 to 25 years, Canada, 2012



E use with caution
Note: Vertical lines on each bar represent 95% confidence intervals.
Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

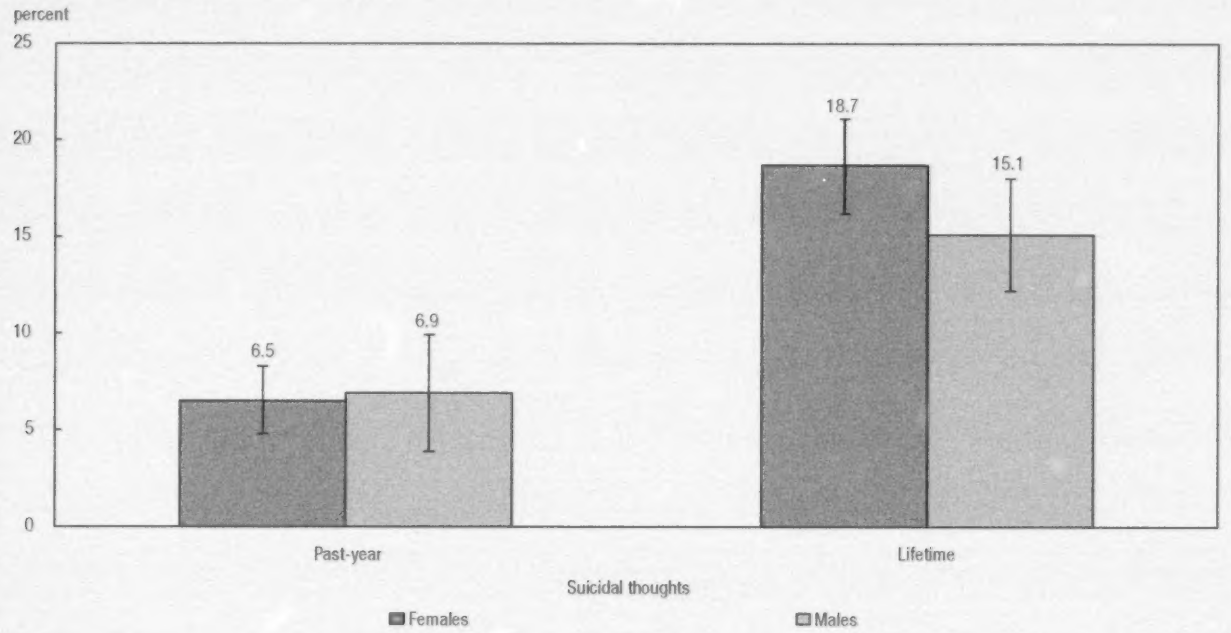
For Inuit, past-year suicidal thoughts were more than twice as common among young adults as at ages 26 to 59 (11.3% versus 4.9%) (Table A.1). Differences between the two age groups were not statistically significant among off-reserve First Nations (7.1% versus 5.8%) and Métis (5.4% versus 4.4%).

For comparisons with the non-Aboriginal population, the 2012 Canadian Community Health Survey–Mental Health (CCHS–MH) was used. Given the small Aboriginal sample in the CCHS–MH, only combined estimates could be reliably generated. As well, because the CCHS–MH was not conducted in Inuit Nunangat, the estimates exclude most Inuit. Nonetheless, the prevalence of past-year and lifetime suicidal thoughts was higher among Aboriginal 18- to 25-year-olds than among their non-Aboriginal contemporaries (11% versus 5% for past year and 27% versus 15% for lifetime) (data not shown).

Few gender differences

In the combined Aboriginal population, the prevalence of reported lifetime and past-year suicidal thoughts was not significantly different between women and men (18.7% versus 15.1%, and 6.5% versus 6.9%, respectively) (Chart 2). However, lifetime suicidal thoughts showed a trend toward higher prevalence in women ($p = 0.10$) (data not shown).

Chart 2
Prevalence of past-year and lifetime suicidal thoughts, off-reserve First Nations, Métis, and Inuit combined, aged 18 to 25 years, by sex, Canada, 2012



Note: Vertical lines on each bar represent 95% confidence intervals.
Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Mood and/or anxiety disorders, hopelessness, and lack of self-worth associated with suicidal thoughts

Consistent with previous research, mood and/or anxiety disorders were associated with reported past-year suicidal thoughts among young adults in each Aboriginal group, even when other factors were taken into account (Table 1). For example, Métis who reported mood and/or anxiety disorders were three times as likely to have had suicidal thoughts than those who did not (9% versus 3%), and among Inuit, the figures were 25% versus 10%. As well, for Inuit, a significant interaction emerged between mood and/or anxiety disorders and sex, suggesting that the association between mood and/or anxiety disorders and suicidal thoughts differs by sex (Table A.4). Among Inuit with mood and/or anxiety disorders, women were more likely than men to have had suicidal thoughts (37% versus 7%) (Chart 3). Among off-reserve First Nations young adults and Métis, sex differences by the presence of mood and/or anxiety were not statistically significant (data not shown).

Table 1
Change in predicted probability of past-year suicidal thoughts among off-reserve First Nations, Métis and Inuit adults, aged 18 to 25, by selected characteristics, Canada, 2012

	Off-reserve First Nations		Métis		Inuit	
	Adjusted probability	Fold-change	Adjusted probability	Fold-change	Adjusted probability	Fold-change
Self-reported-physician-diagnosed mood and/or anxiety disorder(s)						
No†	0.06	...	0.03	...	0.10	...
Yes	0.08	1.3*	0.09	3.0*	0.25	2.5*
Drug use (prescription/street drugs for recreation use)						
No†	0.05	...	0.03	...	0.09	...
Yes	0.10	2.0*	0.09	3.0*	0.20	2.2*
Heavy, frequent drinking (five or more drinks at least once a week)						
No†	0.07	...	0.05	...	0.12	...
Yes	0.08	1.1	0.05	1.0	0.11	0.9
Daily smoking						
No†	—	...	—	...	0.08	...
Yes	—	—	—	—	0.14	1.8*
Hopelessness (felt hopeless all or most of the time in past month)						
No†	0.07	...	0.05	...	0.11	...
Yes	0.06	0.9	0.09	1.8*	0.23	2.1*
High self-worth (no feelings of worthlessness in past month)						
No†	0.20	...	0.14	...	0.20	...
Yes	0.01	0.1*	0.02	0.1*	0.08	0.4*
Personal/parent/grandparent history of residential school attendance						
No†	0.05	...	—	...	0.16	...
Yes	0.08	1.6	—	—	0.10	0.6
Don't know/refusal/not stated	0.07	1.4	—	—	0.13	0.8
Parental/family involvement						
No†	0.08	...	0.06	—	0.16	—
Yes	0.06	0.8	0.05	0.8	0.06	0.4*
High social support						
No†	0.10	...	0.07	...	0.13	...
Yes	0.06	0.6	0.05	0.7	0.11	0.8
Strong extended family ties						
No†	0.09	...	0.04	...	0.11	...
Yes	0.06	0.7*	0.06	1.5	0.12	1.1
Perceived bullying problem in school						
No†	0.06	...	0.06	—	0.11	—
Yes	0.08	1.3	0.05	0.8	0.12	1.1
Currently attending school						
Not attending†	0.08	...	0.06	...	0.11	...
Attending high school or high school equivalency	0.07	0.9	0.07	1.2	0.14	1.3
Attending post-secondary institution	0.04	0.5*	0.04	0.7	0.10	0.9
Sex						
Male†	0.07	...	0.06	...	0.11	...
Female	0.07	1.0	0.05	0.8	0.12	1.1

... not applicable

* significantly different from reference category ($p<0.05$)

† reference category for fold-change

— characteristic not significantly associated with past-year suicidal thoughts when accounting for other characteristics, and not included in the final analysis

Notes: Changes in the predicted probability (marginal prevalence ratio) of suicidal thoughts for those with a characteristic compared with those without the characteristic were calculated while simultaneously including other characteristics in the analysis. A probability of 0.25 indicates that, on average, an individual has 25% adjusted probability of suicidal thoughts. In the text, these are presented as percentages. For example, 0.25 is presented as 25%.

Adjusted, after-tax household income was also included as a control characteristic (not shown) that may account for other unknown or unmeasured characteristics that may explain suicidal thoughts. For more details on regression results, see appendix (Table A.4).

The fold-changes were not statistically compared between Aboriginal groups. For example, fold-change for mood and/or anxiety disorders among First Nations young adults was not compared with the same in other groups.

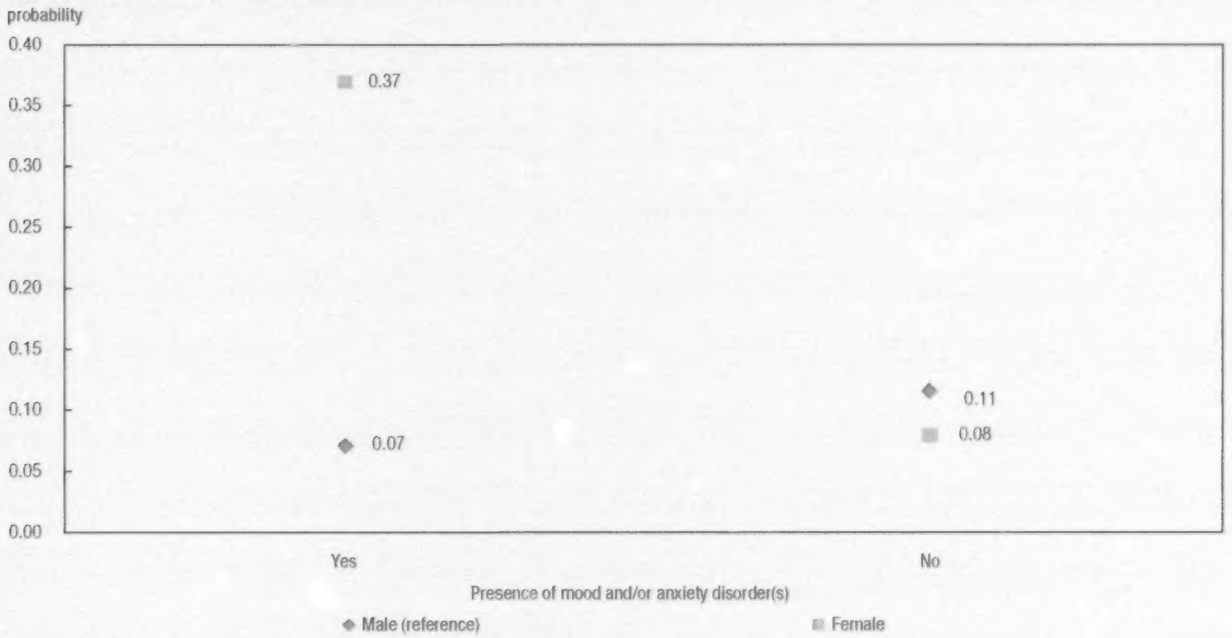
Parental/family involvement defined here as having had homework checked by or received help with homework from parents or other family members, at the time of the survey among respondents in school, or otherwise during their last year of school. Please see the Methods section for more details.

High social support was defined as having family alone or also non-relatives to turn to in times of need. Having no one to turn to or only non-relatives was characterized as **not** having high social support.

Strong extended family ties was defined as having reported strength of ties of 4 or 5 on a scale of 1 to 5 among family members living in their city, town or community but in another household.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012

Chart 3
Predicted probabilities of past-year suicidal thoughts among Inuit, aged 18 to 25 years, by presence of mood and/or anxiety disorder(s) and sex, Canada, 2012



Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Even when sociodemographic, mental health and other factors were taken into account, drug use was associated with suicidal thoughts in each Aboriginal group (Table 1). Among Métis, 9% who reported drug use had suicidal thoughts, compared with 3% of those who did not report drug use. The corresponding percentages were 10% versus 5% for First Nations, and 20% versus 9% for Inuit. By contrast, heavy, frequent drinking was not associated with suicidal thoughts.

Daily smokers among off-reserve First Nations, Métis and Inuit young adults than those without nearly twice as likely to have had suicidal thoughts as occasional/non-smokers (14% versus 6%) (Table A.3). However, when adjustments were made to account for other factors, an association with daily smoking remained only among Inuit (Table 1).

Those who reported high self-worth were significantly less likely to have suicidal thoughts than were those who did not report high self-worth (Table 1). For instance, among off-reserve First Nations young adults, those with high self-worth were approximately 90% less likely to have had suicidal thoughts (1% versus 20%) (Table 1). In all three groups, hopelessness was also correlated with suicidal thoughts (Table A.3), but when other factors were included in the analysis, an association was apparent only in Métis and Inuit (Table 1). For example, among Inuit, those who reported hopelessness were more than twice as likely as those who did not to have suicidal thoughts (23% versus 11%).

To further explore the findings for off-reserve First Nations young adults, two potential influences were considered: effect modification, where the *strength* of association between a factor and outcome is *modified* by other factor(s), and mediation, where the relationship between a factor and the outcome is *mediated* by other factor(s). No effect modification (interaction) by other factors was observed (data not shown). However, self-worth appeared to mediate the effect of hopelessness on suicidal thoughts (Figure A.1, Table A.5). This offers a potential explanation for the lack of association between hopelessness and suicidal thoughts among First Nations young adults: the inclusion of self-worth in the model appears to explain much of the effect of hopelessness on suicidal thoughts.

Associations with parental/family involvement, extended family ties and post-secondary institution attendance in school differ by Aboriginal group

Personal/familial history of residential school attendance was marginally associated with suicidal thoughts among off-reserve First Nations (p = 0.09) 18- to 25-year-olds; even when the effects of other factors were controlled, those with this history were nearly twice as likely as those without this history to have had suicidal thoughts (8% versus 5%) (Table 1).

Parental/family involvement in the individual's homework (at the time of the survey, if the individual was in secondary school, or during the last year of school) was used as proxy for parental attachment. This was correlated with a lower prevalence of suicidal thoughts in all three Aboriginal groups (Table A.3). However, when other factors were taken into account, the only remaining association was among Inuit: those reporting parental involvement were less likely to have had suicidal thoughts than those who did not (6% versus 16%) (Table 1).

Off-reserve First Nations young adults who reported high social support were less likely to have had suicidal thoughts than were those who did not (Table A.3). Trends were similar among Métis and Inuit, but the correlations were only marginally significant (p = 0.05 and 0.07, respectively). When other factors were considered, social support was not associated with suicidal thoughts (Table 1). However, off-reserve First Nations young adults who reported strong extended family ties were less likely to have had suicidal thoughts than those without strong extended family ties (6% versus 9%) (Table 1).

Off-reserve First Nations young adults who perceived a bullying environment in their school (if they were in secondary school at the time of the survey, or during their last year of school, if not) were marginally (p=0.06) more likely to have had suicidal thoughts (8% versus 6%) after adjusting for other factors (Table 1). Off-reserve First Nations young adults who reported an environment of racism in their secondary school were marginally more likely to have had suicidal thoughts (Table A.3). However, upon adjustment for other factors, no association remained for any Aboriginal group between racism in school and suicidal thoughts.

When other factors were taken into account, off-reserve First Nations young adults who were attending a post-secondary institution had a lower prevalence of suicidal thoughts than did those who were not attending any educational institution (4% versus 8%) (Table 1). A marginal association (p=0.10) was seen among Métis, but no association emerged for Inuit.

The individual's sex was not associated with suicidal thoughts in any Aboriginal group. However, since in this age group, women were more likely than men to report mood and/or anxiety disorders and a bullying school environment, and were less likely to report heavy, frequent drinking, additional analysis using interactions was conducted. The only significant interaction was with mood and/or anxiety among Inuit, as described earlier (Table A.4).

Household income was marginally correlated with suicidal thoughts among Métis—a lower prevalence of suicidal thoughts was associated with increasing after-tax adjusted household income (Table A.3). When adjustments were made to account for other factors, no relationship between household income and suicidal thoughts was found for any Aboriginal group.

Text box 1
Overview of factors associated with past-year suicidal thoughts by Aboriginal group

Off-reserve First Nations young adults

- Mental health factors: mood and/or anxiety disorders and drug use
- Personality factors: high self-worth and hopelessness (latter mediated by self-worth)
- Childhood experiences and family characteristics: personal and/or familial residential school experiences, bullying environment in school (marginal associations) and strong extended family ties
- Sociodemographic factors: currently attending post-secondary institution

Métis young adults

- Mental health factors: mood and/or anxiety disorders and drug use
- Personality factors: high self-worth and hopelessness
- Childhood experiences and family characteristics: parental involvement (marginal association)
- Sociodemographic factors: currently attending post-secondary institution (marginal association)

Inuit young adults

- Mental health factors: mood and/or anxiety disorders, drug use and daily smoking
- Personality factors: high self-worth and hopelessness
- Childhood experiences and family characteristics: parental involvement

Conclusion and discussion

About 1 in 20 to 1 in 10 off-reserve First Nations, Métis and Inuit young adults reported having had suicidal thoughts in the previous 12 months and about 1 in 5 to 1 in 4 reported ever having had suicidal thoughts in their lifetime. Suicidal thoughts were twice as prevalent among off-reserve Aboriginal young adults as in non-Aboriginal young adults. In all three Aboriginal groups studied, young adults who reported having mood and/or anxiety disorders, ever using drugs or hopelessness were more likely to have had past-year suicidal thoughts than those who did not report these. However, young adults who reported high self-worth were less likely than those who did not to have suicidal thoughts. Other factors were associated with suicidal thoughts in young adults in some, but not all groups.

No differences emerged between men and women in the prevalence of *past-year* suicidal thoughts, but *lifetime* suicidal thoughts showed a trend towards a higher prevalence among women. This suggests a higher *incidence* of suicidal thoughts among women, which, over time, could lead to a higher cumulative *prevalence* in past-year suicidal thoughts. Consistent with this, previous research has suggested that at each year of age between 13 and 17, girls are more likely than boys to have suicidal thoughts.[67] Women's higher prevalence of *lifetime* suicidal thoughts may reflect the female-male gap in prevalence in adolescence.

While many of the mental disorders and personality factors were associated with past-year suicidal thoughts in all three Aboriginal groups, among off-reserve First Nations young adults, hopelessness was mediated by self-worth. However, in this analysis, hopelessness was based on a single question; other studies have used validated, multi-item scales.[68, 69] As a result, this relationship needs to be further explored in future studies.

Heavy, frequent drinking was not associated with suicidal thoughts in any Aboriginal group. Previous research findings vary, depending on the measure of alcohol consumption. Among on-reserve First Nations adolescents in Manitoba, past-year binge drinking was associated with suicidal behaviour.[30] It is possible that the measure of consumption in this study—heavy, frequent drinking—is not associated with suicidal thoughts among young adults, in general; a parallel analysis of the non-Aboriginal sample in the CCHS–MH yielded similar results (data not shown).

The association between smoking and suicidal thoughts has not been consistent in previous research. In this study, an association between daily smoking and suicidal thoughts was observed only among Inuit. Higher levels of daily smoking among Inuit (61%; Table A.2) than among off-reserve First Nations (26%) and Métis (24%) young adults suggest possible co-morbidity with other mental disorders that may, themselves, be associated with suicidal thoughts. The results for off-reserve First Nations young adults are similar to those for on-reserve youth in Manitoba, among whom no association between daily smoking and suicidal behaviour was evident.[30]

Personal or familial residential school experience was marginally associated with suicidal thoughts among off-reserve First Nations young adults. This is somewhat in line with previous reports of associations between familial residential school experience and suicidal thoughts among on-reserve First Nations 18- to 27-year-olds.[30] Reasons for the lack of association among Métis and Inuit are not clear and require further study. It is possible, however, that factors such as mood and/or anxiety disorders, feelings of low self-worth and/or hopelessness may mediate or moderate the relationship between residential school experience and suicidal thoughts. In addition, high percentages of missing values for residential school history (24% to 33%), combined with relatively small sample sizes, may have weakened potential associations.

Frequency of help with homework was used as proxy for parental/family involvement. This may be a less-than-ideal proxy because of (1) potentially limited need for help with homework in this age group, (2) the difficulties in measuring the level and quality of help received, and (3) the point-in-time nature of data used here. Nonetheless, among all three Aboriginal groups, parental involvement was correlated with a lower prevalence of past-year suicidal thoughts. When the analysis was adjusted for other factors, the association persisted only among Inuit.

Social support was not associated with suicidal thoughts; nonetheless, the relationship may be mediated by self-worth, as reported in other literature.[41] It should be noted that this measure does not assess the strength and quality of social support.

Strong extended family ties—ties among family members living in the same city, town or community but in another household—which was used to assess the strength of social support, was inversely associated with suicidal thoughts among off-reserve First Nations young adults. This measure excludes immediate family members and family members outside the community, as well as peers and friends. A validated, multi-item scale to assess overall social support may be needed to better examine this relationship. For example, among Métis women, social support, assessed using the eight-item modified Medical Outcomes Study Social Support scale, was found to be inversely associated with lifetime suicidal thoughts.[70]

Being bullied has been linked with suicidal thoughts, particularly for males.[31-33] The proxy employed in this analysis—perception of a bullying school environment—does not indicate if the individual was a victim of bullying. A marginal association between a bullying school environment and suicidal thoughts was observed among off-reserve First Nations, but not among Métis or Inuit young adults. The percentage of young adults reporting a bullying school environment was similar for each Aboriginal group, but whether the prevalence of being personally bullied was similar across the three groups is not known.

Post-secondary institution attendance was inversely associated with suicidal thoughts among off-reserve First Nations and Métis (marginal association) young adults. Previous reports have suggested that the greater availability of mental health resources, peer networks and social supports in universities and colleges could be protective against suicidal thoughts.[65, 66] However, why this was not seen in Inuit needs to be further explored.

Many predictors, including mood and/or anxiety disorders, hopelessness, lack of high self-worth and drug use, were also associated with past-year suicidal thoughts in young adults who were not Aboriginal (data not shown).

However, some risk factors that could not be examined in the non-Aboriginal population (for instance, parental involvement, social support, bullying school environment) may be unique to one or more Aboriginal groups.

Additional research is needed to examine characteristics that were not explored here or were explored only to a limited extent because of data restrictions—for example, life stress, parent-child relationship, childhood trauma, social support, sexual orientation, gender identity, past suicide attempts, and availability and use of psychiatric care. The identification of risk factors for suicidal thoughts that are common to all three Aboriginal groups and those that are unique to particular groups adds to the literature and could inform the development and/or evaluation of prevention programs and policies.

Limitations

The results of this analysis should be interpreted in the context of a number of methodological and conceptual limitations.

Suicidal thoughts may be under-reported because of the stigma attached to suicide, and also, because of an inability to recall such thoughts, especially if they occurred years earlier.

The on-reserve First Nations population was excluded from the APS, and so could not be studied. Nationally, lifetime suicidal thoughts were reported by 22.0% of on-reserve First Nations adults aged 18 to 59 during the 2008-to-2010 period,[71] somewhat higher than the corresponding figure for off-reserve First Nations individuals in the 2012 APS (20.7%).

Data are not available for several characteristics, such as life stress, childhood trauma, gender identity and sexual orientation that have been associated with suicidal thoughts in previous research.

Some associations and the strength of those associations may be affected by the validity of the measures in the 2012 APS. For example, prevalence estimates based on self-reports of diagnosed mood and/or anxiety disorders may differ substantially from those that would be obtained using the validated World Health Organization World Mental Health Composite International Diagnostic Interview.[72] Similarly, the ability of single-item questions to measure self-worth and hopelessness, compared with validated multi-item scales, is unknown, as is the impact of using this variable in the analysis.

The proxies used in this analysis for several risk factors may have affected the strength of associations with suicidal thoughts.

Finally, the data are cross-sectional, representing a snapshot in time. This study shows several characteristics to be associated with suicidal thoughts, but cause-and-effect relationships or directionality cannot be inferred.

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Appendix

Data and methods

Data

The data are from the 2012 Aboriginal Peoples Survey (APS) and the 2012 Canadian Community Health Survey-Mental Health (CCHS–MH). The former was used for the analysis to estimate prevalence and identify risk factors of suicidal thoughts among off-reserve First Nations, Métis and Inuit; the latter was used to compare estimates for the Aboriginal and non-Aboriginal populations.

The 2012 APS was a national survey of First Nations people living off reserve, Métis and Inuit aged 6 or older. It was the fourth cycle of the APS and focused on education, employment and health. The survey excluded residents of Indian reserves and settlements and certain First Nations communities in the Yukon and the Northwest Territories. The response rate was 76%, resulting in a sample of 28,410.[73]

The study population for this analysis was 18- to 25-year-olds who responded to questions on suicidal thoughts—a sample of 4,686: 1,965 off-reserve First Nations; 1,748 Métis; and 1,015 Inuit. (The total sample does not equal the sum of the samples by group because respondents with multiple Aboriginal identities were included in more than one group.) The 18-to-25 age group was chosen because they are expected to have different risk factors for suicidal thoughts than adults (26 to 59) and seniors (60 or older). Those younger than 18 were not included in the analysis because of the high rate of proxy responses; proxy respondents were not asked suicide-related questions. Risk factors of suicidal thoughts among off-reserve First Nations, Métis and Inuit adults , aged 26 to 59 years, have been explored previously in another study.[74]

The 2012 CCHS–MH was a cross-sectional survey of the mental health status of Canadians and their use of mental health services. Data were collected from the household population aged 15 or older in the 10 provinces.[75] The survey excluded residents of Indian reserves and settlements, full-time members of the Canadian Forces, and the institutionalized population. The response rate was 68.9%, yielding a sample of 25,113. The study population for this analysis was 18- to 25-year-olds who did not identify as an Aboriginal person ("non-Aboriginal")—a sample of 3,020.

Questions about suicidal thoughts differed in the APS and the CCHS–MH.

For the APS, respondents were asked, "Have you ever seriously considered committing suicide or taking your own life?" Those who responded "Yes" to this lifetime question were asked: "Has this happened in the past 12 months?"

In the CCHS–MH, the presence of "lifetime suicidal thoughts" was based on a variable derived from responses to a combination of questions: 1) "Has [this] ever happened to you: You seriously thought about committing suicide or taking your own life"; and 2) "Think of the period of two weeks or longer when your feelings of being [depressed] and other problems were most severe and frequent. During that time, did you seriously think about committing suicide/taking your own life?" Those who responded "Yes" to this lifetime question were asked: "In the past 12 months, did [this] happen to you: You seriously thought about committing suicide or taking your own life."

Analysis

Prevalence estimation

Prevalence of suicidal thoughts in the previous 12 months and lifetime were estimated separately for off-reserve First Nations, Métis and Inuit young adults. For most analyses, men and women were combined to increase sample size. Percentages were calculated and compared using methods that took into account the survey design of the APS and the CCHS.[73, 76] Missing values including "don't know," "not stated" and "refusal" were excluded from the denominator when calculating percentages except in the case of residential school attendance which had higher rates of missing values. Statistically significant differences were determined using tests specific for complex survey data.[77-80]

To reduce the potential for error or bias that may arise in comparing estimates from surveys with different questions, sampling frames and contexts, only data from the CCHS–MH were used to compare the prevalence of past-year suicidal thoughts in the total Aboriginal and non-Aboriginal populations. Small sample sizes in the CCHS–MH preclude reliable estimates for each Aboriginal group. Therefore, a combined Aboriginal estimate was generated, which was compared with the non-Aboriginal estimate. This estimate excludes most young adult Inuit, because the CCHS–MH did not cover Inuit Nunangat. As a result, the prevalence of suicidal thoughts among Aboriginal young adults overall is expected to be underestimated.

Characteristics associated with past-year suicidal thoughts

The characteristics considered as potential risk factors for suicidal thoughts in this analysis were based on the literature and their availability in the 2012 APS. The Beautrais[12] conceptual model of risk factors for suicide attempts and suicide among young people was used to guide the selection of risk factors from the APS data. Because the conceptual model pertains to suicide and suicide attempts, literature specifically on suicidal thoughts in young adults was reviewed to identify other potential risk factors. The candidate risk factors and the variables used to operationalize them were:

Mental disorders

- Mood and/or anxiety disorders: self-reported, health-professional-diagnosed mood and/or anxiety disorders—specifically, depression, bipolar disorder, mania, dysthymia, phobia, obsessive-compulsive disorder, and panic disorder.
- Drug use: ever used prescription medications for recreational purposes or street drugs.
- Heavy, frequent drinking: five or more drinks on one occasion, once or more than once a week in past 12 months.[81]
- Current daily smoking: at least one cigarette a day.

Personality factors

- High self-worth: no feelings of worthlessness in the previous month. Although the question pertained to the previous month, self-esteem has been shown to be consistent over time.[82]
- Hopelessness: felt hopeless all or most of the time in previous month
  - These variables are based on two of 10 items in the Kessler scale, which has been validated for measuring non-specific psychological distress in off-reserve First Nations, Métis and Inuit.[83]

Childhood experiences and family characteristics

- Personal or family history of residential school: The categories were: "No" (personal/parent/grandparent history), "Yes," and "Don't know/Refusal/Not stated (missing values)." Both personal and family history were included to account for potential intergenerational transmission of trauma. Only 2.4% of 18- to 25-year-olds reported personal attendance. Because of the large number of respondents with missing values (1,232 or 26.3% of the 4,686 sample) and because excluding them from the analysis would greatly reduce sample size, they were included in a separate category.
- Perceived bullying problem in the school (at the time of the survey, if the respondent was in school, or in their last year of school): "Yes" if respondents agreed or strongly agreed and "no" if they disagreed or strongly disagreed that there was a bullying problem in their school was used as a proxy for adverse childhood experiences. This does not refer to personal experiences of victimization from bullying.
- Perceived racism problem in school (at the time of the survey, if the respondent was in school, or in their last year of school): "Yes" if respondents agreed or strongly agreed and "no" if they disagreed or strongly disagreed that there was a racism problem in their school was used as another proxy for adverse childhood experiences. Again, this does not refer to personal experiences.
- Parental involvement: The frequency (at the time of the survey, if the respondent was in school, or in their last year of school) with which parents or another family member provided help with or checked the individual's homework was used as a proxy for parental attachment. Those who rarely or never received help were categorized as "No" to "Parental involvement"; otherwise, "Yes."

- High social support: Social support was assessed with questions about whom respondents would turn to in times of need. Those who reported that they turned to family alone or also to non-relatives were categorized as having high social support. Those who reported having no one or only non-relatives were categorized as not having high social support.
- Strong extended family ties: Because social support, as described above, does not indicate the strength of the support, another factor was included. Respondents were asked to rate the strength of ties among family members living in their city, town or community, but in another household, on a scale of 0 to 5. Those who responded 0, 1, 2 or 3 were categorized as "No" to "strong extended family ties"; those who answered 4 or 5 were categorized as "Yes." The cut-off was selected based on the weighted median rating of 3.7 for this age group.

Sociodemographic factors

- Currently attending an educational institution: "Currently attending school" with the categories, "Not attending," "Attending high school or high school equivalency," and "Attending post-secondary institution," was used.
- After-tax, adjusted household income: After-tax household income adjusted for household size (used as an interval variable).
- Sex: To account for sex differences, the sex variable with "male" as the reference category was used.

For most analyses, men and women were combined to increase sample size. In preliminary analysis, using a combined Aboriginal sample, the prevalence of many of the risk factors for suicidal thoughts did not differ by sex (data not shown). The exceptions were mood and/or anxiety disorders (higher in women); perceived bullying problem (higher in women); and heavy, frequent drinking (higher in men). To address this, the individual's sex was included as a factor in the multivariate analyses.

Bivariate and multivariate analyses

Because many of the candidate risk factors in the 2012 APS pertained to recent reference periods, the results for associated factors are presented only for past-year suicidal thoughts. For example, high self-worth and hopelessness pertained to the 30 days before the survey, and heavy, frequent drinking referred to the previous 12 months. Furthermore, factors such as "currently attending an educational institution" are expected to be relevant to past-year suicidal thoughts, but not to lifetime suicidal thoughts.

Bivariate analyses were conducted to determine if individuals with specific characteristics were more or less likely to have had suicidal thoughts. One characteristic was examined at a time without adjusting for other candidate factors. Statistically significant differences were identified using tests specific to complex survey data.[77-80]

Logistic regression analyses were then performed to identify characteristics significantly associated with suicidal thoughts when other factors were taken into account. Multinomial logistic regression analyses enabled the use of a multi-category outcome variable—those who had suicidal thoughts in the previous year ("*past-year*"), those who had suicidal thoughts previously, but not in the previous year ("*distant past*"), and those who never had suicidal thoughts. This approach addresses issues associated with: (1) employing binomial logistic regression using a binary variable that combines respondents with past-year and distant-past suicidal thoughts, "*lifetime suicidal thoughts*," while exploring risk factors that pertained to the more recent period (past 12 months or more recent); (2) excluding respondents who previously had suicidal thoughts, but not in the past 12 months, to generate a "*past-year suicidal thoughts*" outcome variable for logistic regression, thereby reducing sample size; or (3) combining those with distant-past suicidal thoughts with those who did not have suicidal thoughts, thereby potentially incorrectly classifying the former, who are expected to have some risk factors in common with those who had past-year suicidal thoughts. Multinomial logistic regression allows the use of all the available information and enables identification of characteristics statistically associated with both past-year and distant-past suicidal thoughts. As with regular logistic regression, this approach can be used to calculate the probability of past-year suicidal thoughts among those who did and did not have a characteristic while considering many characteristics at once (Table 1).

Factors significantly associated with past-year suicidal thoughts were identified using the Allen-Cady modified backwards-selection method.[84] Briefly, potential risk factors were categorized into two groups. The first group consisted of risk factors that have been shown to be strongly/consistently associated with suicidal thoughts in previous research: mood and/or anxiety disorders, high self-worth, hopelessness, and drug use. They were retained in the analysis regardless of statistical significance. The remaining risk factors were ranked based on potential importance. They were removed in order of ascending importance until the first risk factor with a p-value of 0.05 was reached.

The marginal prevalence ratio, or "fold-change" (increase/decrease in probability with the presence of a characteristic when adjusting for other characteristics), of having had suicidal thoughts was estimated for respondents with and without each characteristic. Fold change (or "marginal prevalence ratio") was calculated by dividing the likelihood estimate for respondents with a characteristic by that for respondents without the characteristic. For example, if the fold-change was 2.0 for a particular characteristic, people with the characteristic were twice as likely as those who did not have the characteristic to have had suicidal thoughts. By contrast, if the fold-change was 0.5 for a characteristic, individuals with the characteristic were half as likely as those without the characteristic to have had suicidal thoughts.

Because mood and/or anxiety disorders and a bullying school environment were more likely to be reported by women than men, and heavy, frequent drinking was more likely to be reported by men, interaction terms (between sex and these variables) were included in the analyses. A significant interaction term would indicate that the association between the factor and suicidal thoughts varies with the sex of the individual.

Final regression models were assessed for goodness-of-fit, multicollinearity and other diagnostics.

To examine potential mediation between hopelessness and suicidal thoughts by self-worth among off-reserve First Nations young adults, the method proposed by Valeri and VanderWeele[85] using the counterfactual framework and the SAS macro "Mediation" was used. This method estimates the "controlled direct effects," "natural direct effects," "natural indirect effect," and the "marginal total effect" (interpretation of these concepts are included in the footnote of Table A.5). In this analysis, because the macro does not allow for inclusion of survey weights, they were ignored. Binary logistic regressions using data that excluded distant-past suicidal thoughts were carried out, thereby limiting the dataset to those who had past-year suicidal thoughts and those who never had suicidal thoughts. Two logistic regression models were fitted: one with suicidal thoughts as the dependent variable, and the other with self-worth as the dependent variable. All covariate characteristics in the off-reserve First Nations model (Table 1) were included. Because no interaction was observed between hopelessness and self-worth, this was not included in this analysis. From these analyses, the indirect effects odds ratio and the percentage of the total effect due to mediation by self-worth were estimated, with the latter on a risk difference scale, as suggested in VanderWeele and Vansteelandt.[86]

Textbox 2
Definitions

Bivariate analysis: Data analysis that explores the correlation between two variables without taking into account other variables.[87]

Logistic regression: A statistical method for analyzing a dataset in which there are one or more independent variables that determine an outcome. The outcome is measured with a binary variable (in which there are only two possible outcomes).[88]

Mediation: A mediation occurs when the third variable (mediator) carries the influence of a given independent variable to a given dependent variable (outcome).[89]

Interaction: An interaction occurs when the effect of a given independent variable on the dependent variable (outcome) depends on the level of a third variable.[89]

Table A.1

Prevalence of lifetime and past-year suicidal thoughts among off-reserve First Nations, Métis, Inuit and non-Aboriginal adults, by sex and age group, Canada, 2012

		95% confidence interval	
	Percent	from	to
Past-year suicidal thoughts (18+ years)			
Off-reserve First Nations, Inuit and Métis, and sexes combined	4.8	4.0	5.6
Off-reserve First Nations, sexes combined	5.6	4.1	7.0
Métis, sexes combined	4.0	3.3	4.6
Inuit, sexes combined	5.9	4.7	7.2
Off-reserve First Nations, Inuit and Métis combined, by sex (18+ years)			
Men	4.5	3.5	5.6
Women	5.0	4.0	5.9
Off-reserve First Nations, sexes combined			
18 to 25 years	7.1[E]	4.7	9.5
26 to 59 years[†]	5.8[E]	3.8	7.8
Métis, sexes combined			
18 to 25 years	5.4	3.7	7.2
26 to 59 years[†]	4.4	3.5	5.4
Inuit, sexes combined			
18 to 25 years	11.3*	7.8	14.8
26 to 59 years[†]	4.9	3.4	6.4
Non-Aboriginal (provinces only), sexes combined			
18 to 25 years	5.0*	3.5	6.5
26 to 59 years[†]	3.1	2.6	3.6
Lifetime suicidal thoughts (18+ years)			
Off-reserve First Nations, Inuit and Métis, and sexes combined	19.5	18.3	20.6
Off-reserve First Nations, sexes combined	21.1	19.3	22.9
Métis, sexes combined	17.5	15.9	19.1
Inuit, sexes combined	22.3	19.9	24.7
Off-reserve First Nations, Inuit and Métis combined, by sex (18+ years)			
Men	16.3	14.6	17.9
Women	21.9	20.4	23.5
Off-reserve First Nations, sexes combined			
18 to 25 years	16.9*	13.7	20.0
26 to 59 years[†]	24.0	21.6	26.3
Métis, sexes combined			
18 to 25 years	15.7*	12.6	18.7
26 to 59 years[†]	19.6	17.6	21.6
Inuit, sexes combined			
18 to 25 years	26.7	22.3	31.2
26 to 59 years[†]	23.5	20.4	26.6
Non-Aboriginal (provinces only), sexes combined			
18 to 25 years	14.7*	12.7	16.7
26 to 59 years[†]	12.4	11.5	13.4

[E] use with caution

* significantly different from 26 to 59 year olds at $p<0.05$

[†] reference category

Sources: Statistics Canada, Aboriginal Peoples Survey, 2012 and the Canadian Community Health Survey – Mental Health, 2012.

Table A.2

Prevalence of health and socio-demographic factors among off-reserve First Nations, Métis and Inuit adults, aged 18 to 25, by Aboriginal group, Canada, 2012

	Off-reserve First Nations	Métis	Inuit
	percent		
Self-reported-physician-diagnosed mood and/or anxiety disorders	21.2	19.1	10.5
Drug use (prescription or street drugs for recreation use)	25.1	23.9	17.8
Heavy, frequent drinking (five or more drinks per occasion at least once a week)	12.7	10.6	12.1
Daily smoking	26.3	24.3	60.9
High self-worth (no feelings of low worthlessness in past month)	81.4	84.6	75.7
Hopelessness (having had feelings of hopelessness all or most of the time in past month)	4.0[E]	3.2[E]	F
Parental/family involvement	56.7	57.5	49.5
High social support	90.4	94.4	91.9
Strong extended family ties	65.2	69.3	62.8
Perceived bullying problem in school	46.9	45.7	52.5
Perceived racism problem in school	25.5	23.6	23.3
Personal/parent/grandparent history of residential school attendance			
Yes	50.8	23.8	49.0
No	23.6	49.0	18.4
Don't know/refusal/not stated	25.5	27.2	32.6
Currently attending school			
Not attending	65.8	68.2	76.0
Attending high school or high school equivalency	10.8	7.4	15.6
Attending post-secondary institution	23.4	24.3	8.4[E]

[E] use with caution

F too unreliable to be published

Notes: Parental/family involvement defined here as having had homework checked by or received help with homework from parents or other family members, at the time of the survey among respondents in school, or otherwise during their last year of school. Please see the Methods section for more details.

High social support was defined as having family alone or also non-relatives to turn to in times of need. Having no one to turn to or only non-relatives was characterized as not having high social support.

Strong extended family ties was defined as having reported strength of ties of 4 or 5 on a scale of 1 to 5 among family members living in their city, town or community but in another household.

Sources: Statistics Canada, Aboriginal Peoples Survey, 2012 and the Canadian Community Health Survey – Mental Health, 2012

Table A.3

Prevalence of past-year suicidal thoughts among off-reserve First Nations, Métis and Inuit adults, aged 18 to 25, by selected characteristics, Canada, 2012

	Off-reserve First Nations	Métis	Inuit
	percent		
Self-reported-physician-diagnosed mood and/or anxiety disorders			
No (reference)	2.9[E]	2.2[E]	8.0[E]
Yes	23.7[E]*	20[E]*	37.7[E]*
Drug use (prescription or street drugs for recreation use)			
No (reference)	3.1[E]	2.5[E]	7.0[E]
Yes	19.0[E]*	14.8[E]*	29.6[E]*
Heavy, frequent drinking (five or more drinks per occasion at least once a week)			
No (reference)	5.8[E]	4.9[E]	9.9[E]
Yes	F	9.7[E]	F
Daily smoking			
No (reference)	5.1[E]	3.5[E]	5.8[E]
Yes	12.4[E]*	11.3[E]*	14.2[E]*
High Self-worth (no feelings of low worthlessness in past month)			
No (reference)	33.7	26.9	27.6[E]
Yes	1.0[E]*	1.6[E]*	6.3[E]*
Hopelessness (having had feelings of hopelessness all or most of the time in past month)			
No (reference)	5.5[E]	4.0	9.5[E]
Yes	45.7[E]*	47.8[E]*	F
Parental/family involvement			
No (reference)	9.9[E]	8.0[E]	17.6[E]
Yes	4.6[E]*	3.2*[E]*	5.5[E]*
High social support			
No (reference)	24.7[E]	14.1[E]	F
Yes	5.1[E]*	4.9[E]	9.6[E]
Strong extended family ties			
No (reference)	12.6[E]	7.6[E]	14.0[E]
Yes	4.0[E]*	4.5[E]	9.4[E]
Perceived bullying problem in school			
No (reference)	3.4[E]	4.7[E]	9.5[E]
Yes	11.0[E]*	6.3[E]	12.8[E]
Perceived racism problem in school			
No (reference)	5.6[E]	4.6[E]	11.7[E]
Yes	11.3[E]	8.6[E]	9.4[E]
Personal/parent/grandparent history of residential school attendance			
No (reference)	3.3[E]	5.8[E]	F
Yes	7.1[E]	5.6[E]	11.1[E]
Don't know/refusal/not stated	11.0[E]	4.6[E]	11.6[E]
Currently attending school			
Not attending (reference)	8.0[E]	6.3[E]	11.6
Attending high school or high school equivalency	F	F	F
Attending post-secondary institution	F	F	F
Sex			
Male (reference)	7.5[E]	5.7[E]	10.4[E]
Female	6.8[E]	5.2[E]	12.0[E]
Household family income	—	§	—

[E] use with caution

F too unreliable to be published

* significantly different than the reference category ($p<0.05$ for yes/no variable, $p<0.025$ for family history of residential school experience to adjust for multiple comparisons).

§ significantly associated with past-year suicidal thoughts in univariate regressions

— characteristic not significantly associated with past-year suicidal thoughts

Notes: Parental/family involvement defined here as having had homework checked by or received help with homework from other family members, at the time of the survey among respondents in school, or otherwise during their last year of school. Please see the Methods section for more details.

High social support was defined as having family alone or also non-relatives to turn to in times of need. Having no one to turn to or only non-relatives was characterized as **not** having high social support.

Strong extended family ties was defined as having reported strength of ties of 4 or 5 on a scale of 1 to 5 among family members living in their city, town or community but in another household.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Table A.4

Results from logistic regression analyses for past-year suicidal thoughts among off-reserve First Nations, Métis and Inuit adults, aged 18 to 25 years, by Aboriginal group, Canada, 2012

	Off-reserve First Nations			Métis			Inuit			Inuit (with interaction)		
	beta coefficient	standard error	p-value	beta coefficient	standard error	p-value	beta coefficient	standard error	p-value	beta coefficient	standard error	p-value
Intercept	-1.93	0.74	0.009	-1.44	0.71	0.044	-1.09	0.84	0.195	-0.86	0.82	0.296
Self-reported-physician-diagnosed mood and/or anxiety disorder(s)	0.93	0.37	0.013	1.58	0.38	0.000	1.89	0.53	0.000	-0.23	0.92	0.806
Drug use (prescription/street drugs for ecreational use)	1.57	0.40	0.000	1.82	0.36	0.000	1.25	0.39	0.001	1.23	0.37	0.001
Heavy, frequent drinking	0.37	0.53	0.483	-0.02	0.52	0.966	-0.02	0.46	0.960	0.02	0.44	0.972
Daily smoking	—	—	—	—	—	—	1.01	0.45	0.025	1.14	0.47	0.015
Hopelessness (felt hopeless all or most of the time in past month)	-0.40	0.68	0.559	1.58	0.61	0.011	2.58	0.74	0.001	2.77	0.78	0.000
High self-worth (no feelings of worthlessness in past month)	-3.73	0.43	0.000	-2.31	0.36	0.000	-1.37	0.4	0.001	-1.27	0.39	0.001
Personal/Parent/Grandparent history of residential school attendance (reference category: no)												
Yes	0.87	0.51	0.091	—	—	—	-0.80	0.54	0.138	-0.85	0.53	0.105
Don't know/refusal/not stated	0.70	0.60	0.248	—	—	—	-0.52	0.60	0.392	-0.62	0.61	0.311
Bullying environment in school	0.75	0.40	0.060	-0.37	0.36	0.299	0.18	0.35	0.603	0.30	0.35	0.393
High social support	-0.50	0.46	0.279	-0.49	0.54	0.362	-0.28	0.57	0.630	-0.57	0.51	0.261
Strong extended family ties	-0.80	0.40	0.048	0.19	0.36	0.595	-0.04	0.39	0.913	-0.06	0.37	0.881
Parental/family involvement	-0.44	0.42	0.299	-0.62	0.38	0.106	-1.25	0.40	0.002	-1.18	0.40	0.003
Currently attending school (reference category: Not attending)												
Attending high school or high school equivalency	-0.15	0.56	0.783	0.3	0.39	0.437	0.48	0.61	0.434	0.45	0.6	0.458
Attending post-secondary institution	-1.20	0.55	0.025	-0.84	0.51	0.100	-0.51	0.78	0.518	-0.96	0.79	0.225
Female sex	0.20	0.38	0.589	-0.31	0.37	0.402	0.05	0.39	0.907	-0.48	0.44	0.276
Mood and/or anxiety disorders X Sex	—	—	—	—	—	—	—	—	—	3.13	1.11	0.005

— characteristic not significantly associated with past-year suicidal thoughts when accounting for other characteristics, and not included in the final analysis

Notes: Sample sizes: 1,529 (off-reserve First Nations), 1,376 (Métis) and 708 (Inuit)

Parental/family involvement defined here as having had homework checked by or received help with homework from parents or other family members, at the time of the survey among respondents in school, or otherwise during their last year of school. Please see the Methods section for more details.

High social support was defined as having family alone or also non-relatives to turn to in times of need. Having no one to turn to or only non-relatives was characterized as **not** having high social support.

Strong extended family ties was defined as having reported strength of ties of 4 or 5 on a scale of 1 to 5 among family members living in their city, town or community but in another household.

All regression models adjusted for household income.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Figure A.1
Hypothesized mediation by self-worth of relationship between hopelessness and past-year suicidal thoughts, off-reserve First Nations adults, aged 18 to 25, Canada, 2012

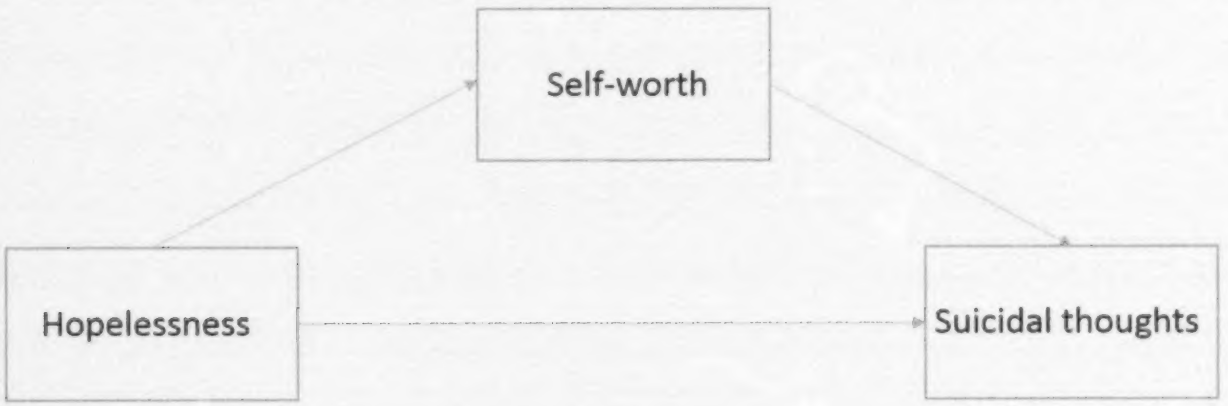

Table A.5

Results from mediation analysis of relationship between hopelessness and past-year suicidal thoughts among off-reserve First Nations adults, aged 18 to 25, Canada, 2012

Effect	Estimate	p-value	95% confidence interval		Proportion of total effect due to mediation (%)
			from	to	
Controlled direct effect[1]	1.84	0.543	0.26	13.03	—
Natural direct effect[2]	1.84	0.543	0.26	13.03	—
Natural indirect effect[3]	3.95	0.170	0.56	28.03	86.7[†]
Marginal total effect[4]	7.25	0.047	1.02	51.47	—

† proportion of total effect due to mediation by self-worth was calculated on a risk difference scale, as suggested in VanderWeele and Vansteelandt (2010)

1. Controlled direct effect: odds ratio of past-year suicidal thought holding self-worth constant at average level in the population.

2. Natural direct effect: odds ratio of past-year suicidal thoughts holding self-worth constant at level among those with hopelessness.

3. Natural indirect effect: odds ratio of past-year suicidal thoughts among those with hopelessness when self-worth changes from that for those without hopelessness to that for those with hopelessness.

4. Marginal total effect: odds ratio of having had past-year suicidal thoughts (full effect).

Note: Regression model was adjusted for all factors included in First Nations young adults model without interaction in Table A.4.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

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